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NEW RECORDS OF GEOPHILOMORPH CENTIPEDES (CHILOPODA: GEOPHILOMORPHA) FROM NATURAL AND ANTHROPOGENIC HABITATS OF SIBERIA

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Summary. New records allow for the distributions of seven geophilomorph centipede species from natural and anthropogenic localities of Siberia to be refined. Genus *Tygarrup* Chamberlin, 1912 and *T. javanicus* Attems, 1929 are reported from Russia for the first time. Family Mecistocephalidae is formally new to the fauna of Siberia. *Geophilus proximus* C.L. Koch, 1847 is new for Kemerovskaya oblast and Republic of Khakassia, *Arctogeophilus macrocephalus* Folkmanová et Dobroruka, 1960 and *Escaryus japonicus* Attems, 1927 are recorded from Republic of Khakassia for the first time, *E. koreanus* Takakuwa, 1937 is new for Novosibirskaya oblast, Republic of Khakassia and Irkutskaya oblast, and *Strigamia pusilla* (Sseliwanoff, 1884) is new for Republic of Sakha (Yakutia).

Key words: geophilomorph centipedes, Mecistocephalidae, Geophilidae, Linotaeniidae, Schendylidae, fauna, new records, Russia, Asia.

П. С. Нефедьев. Новые находки многоножек-землянок (Chilopoda: Geophilomorpha) из природных и антропогенных местообитаний Сибири // Дальневосточный энтомолог. 2019. N 380. С. 23-28.

Резюме. Новые находки семи видов многоножек-землянок из естественных и антропогенных местообитаний Сибири позволяют уточнить их ареалы. Род *Tygarrup* Chamberlin, 1912 и вид *T. javanicus* Attems, 1929 впервые отмечены в России. Семейство Mecistocephalidae оказалось формально новым для фауны губоногих многоножек Сибири. *Geophilus proximus* C.L. Koch, 1847 впервые указан для Кемеровской области и Республики Хакасия; *Arctogeophilus macrocephalus* Folkmanová et Dobroruka, 1960 и *Escaryus japonicus* Attems, 1927 впервые приводятся для Республики Хакасия; *E. koreanus* Takakuwa, 1937 впервые указан для Новосибирской области, Республики Хакасия и Иркутской области, а *Strigamia pusilla* (Sseliwanoff, 1884) – для Республики Саха (Якутия).

INTRODUCTION

The fauna of geophilomorph centipedes of Siberia encompasses at least 14 species from five genera and three families. Every recent paper (Nefediev *et al*., 2017a, b, c; 2018; Dyachkov, 2017) has supplemented and updated our knowledge on the range limits of Geophilomorpha species from southwestern Siberia. In general, the fauna of geophilomorph centipedes

of Siberia is still being poorly studied. This paper continues our efforts to investigate the Siberian geophilomorphs mainly collected from natural and partly from urban localities.

The material treated herein has been deposited in the collection of the Altai State University, Barnaul, Russia.

NEW RECORDS

Order Geophilomorpha Pocock, 1895

Family Mecistocephalidae Bollman, 1893

Tygarrup javanicus Attems, 1929

MATERIAL. **Russia: Altaiskii krai**: Barnaul, Yuzhnyi, South Siberian Botanical Garden, hothouse, 18.V 2017, 1 ♀, leg. P.S. Nefediev.

DISTRIBUTION. Being East Asian in origin, this species inhabits from the Seychelles through southeast Asia to the Hawaiian Islands, also introduced to anthropogenic habitats, i.e. hothouses and urban sites, in European countries, such as Great Britain, Austria, Germany, Slovakia and the Czech Republic (Tuf *et al*., 2018).

REMARKS. Both the genus *Tygarrup* Chamberlin, 1912 and the species *T. javanicus* are formally new to Russia, as well as the family Mecistocephalidae is recorded in Siberia for the first time. Now *T. javanicus* has been found introduced to a hothouse of the South Siberian Botanical Garden.

Family Geophilidae Cook, 1896

Arctogeophilus macrocephalus Folkmanová et Dobroruka, 1960

MATERIAL. **Russia: Republic of Khakassia**: Altaiskii District, “Ochurskii Bor”, 53°09′33.5′′N, 91°36′35.9′′E, *Pinus sylvestris* forest, 30.IX 2008, 1 ♂, leg. D.I. Pogrebnyak; **Altaiskii krai**: Krasnoschiokovskii District, near Tigirek, Tigirek State Nature Reserve, Khankhara Site, Dragunskii Brook, steppe on SW slope, *Rosa spinosissima*, 17.VIII 2016, 1 ♀; Charyshskii District, upper reaches of Belaya River, S macroslope, steppe on slope with bushes and sparse *Larix sibirica*, 20.VI 2017, 1 juv.; Charyshskii District, near Komendantka village, Altai State University Field Station “Goluboi Utios”, *Betula pendula* and *Populus tremula* forest on N slope, ca 520 m a.s.l., 20.VI 2017, 2 ♂, 1 ♀, all leg. P.S. Nefediev.

DISTRIBUTION. Originally described from the Tatar Republic in European Russia, this species is very widespread from European Russia through Siberia to the Russian Far East. In Siberia, *A*. *macrocephalus* has previously been recorded from Kemerovskaya oblast, Tomskaya oblast, Republic of Altai, Altaiskii krai, and Krasnoyarskii krai (Nefediev *et al*., 2017c).

REMARKS. The above record of this species is new to Republic of Khakassia.

Geophilus proximus C.L. Koch, 1847

MATERIAL. **Russia: Republic of Khakassia**: Abakan, “Orbita” Gardening Partnership, bank of pond near Abakan–Solnogorsk road, in soil, under pebble, 17.V 2008, 1 ♀, leg. S.V. Dragan; **Altaiskii krai**: Slavgorodskii District, Yarovoye, 20–27.VII 2016, 1 juv., leg. D.A. Efimov; **Kemerovskaya oblast**: Kemerovskii District, Lyapki village, 55°11′N, 86°23′E, *Betula pendula* and *Pinus sylvestris* forest, 12.VII 2017, 1 ♀, leg. D.A. Efimov.

DISTRIBUTION. The distribution of this species covers the northern part of the Palaearctic from northeastern Europe to Japan. In Siberia, *G. proximus* has previously been known from Tyumenskaya, Omskaya, Novosibirskaya and Tomskaya oblasts, as well as from Altaiskii krai (Nefediev *et al.*, 2017b).

REMARKS. This species has hitherto been recorded neither from Kemerovskaya oblast nor from Republic of Khakassia, both SW Siberia.

Family Linotaeniidae Cook, 1904

Strigamia pusilla **(Sseliwanoff, 1884)**

MATERIAL. **Russia: Republic of Sakha** (**Yakutia**): Lenskii Municipal District, ca 80 km N of Lensk, 61.374430°N, 114.509602°E, *Pinus sibirica*, *Pinus sylvestris* and *Larix sibirica* forest with small-leaved trees, *Vaccinium myrtillus*, *Vaccinium vitisidaea* and *Juniperus*, under moss, 22.VIII 2016, 1 ♀, leg. E.M. Kandrov, M.V. Krivoshapkin; **Altaiskii krai**: Charyshskii District, 5 km S of Ust-Kumir, valley of Kumir River, 50°58.988′N, 84°17.415′E, forest with tall grass vegetation, ca 805 m a.s.l., sifting leaf litter, 1.VIII 2018, 1 ♀, leg. V.I. Gusarov, M.F. Maurstad, V. Løveng.

DISTRIBUTION. This species is highly widespread from the Sudetes, Carpathians and the Caucasus, through the Urals, to SW and central Siberia and N Mongolia (Nefediev *et al.*, 2017a).

REMARKS. The above record of this species is new to Republic of Sakha (Yakutia).

Family Schendylidae Cook, 1896

Escaryus japonicus **Attems, 1927**

MATERIAL. **Russia: Republic of Khakassia**: Ust-Abakanskii District, valley of Uibat River, 53.825765°N, 90.052647°E, mixed forest, in litter, 18.VII 2012, 2 ♀, leg. A.P. Pavlov; Ust-Abakanskii District, valley of Uibat River, 53.825765°N, 90.052647°E, mixed forest, in litter, 18.VII 2018, 1 ♂, 4 ♀, leg. E.V. Gribanova; **Kemerovskaya oblast**: Krapivinskii District, 8 km SSW of Saltymakovo village, Kemerovo State University Field Station "Azhendarovo", floodplain of Tom River, 54°45′N, 87°01′E, 7.IX 2017, 1 ♂, leg. D.A. Efimov; **Republic of Altai**: Ulaganskii District, 4 km NE of Aktash village, valley of Yarlyamry River, 50.33167°N, 87.65897°E, *Larix sibirica* and *Picea obovata* forest with *Alnus*, *Vaccinium vitis-idaea* and green mosses, ca 1615 m a.s.l., 24.VII 2018, 3 ♂, 1 ♀; Kosh-Agachskii District, 5.5 km NNE of Kurai village, S macroslope of Kuraiskii Mt. Range, valley of Kuraika River, left river bank, 50.28225°N, 87.95463°E, *Larix sibirica* and *Picea obovata* forest with *Pinus sibirica*, *Caragana*, small grass vegetation and green mosses, ca 1790 m a.s.l., in moss, under logs, 25.VII 2018, 1 juv.; Kosh-Agachskii District, 21 air-km NW of Belyashi (Dzhazator) village, S macroslope of Yuzhno-Chuiskii Mt. Range, ford on Karasu River, 49.83549°N, 87.20798°E, *Pinus sibirica* and *Picea obovata* forest with *Betula pendula*, *Alnus*, *Caragana*, *Ribes nigrum*, small grass vegetation and green mosses, ca 1605 m a.s.l., 19.VII 2018, 1 ♂, all leg. P.S. Nefediev; Kosh-Agachskii District, 20 km NE of Kokorya, Chikhachiova Mt. Range, Talduair massif, right bank of Sailyugem River, 50.01802°N, 89.23557°E, floodplain *Larix sibirica* forest, under stones, 2225 m a.s.l., 26.VII 2018, 1 ♂, leg. V. Løveng; Ulaganskii District, 3 air-km NE of Aktash village, valley of Yarlyamry River, 50°20.027′N, 87°38.945′E, forest with *Picea obovata*, *Larix sibirica*, *Pinus sibirica*, *Caragana arborescens*, *Lonicera*,

Ribes, moss, 1575 m a.s.l., sifting leaf litter and moss over 50 m, 24.07.2018, 1 ♂, leg. V.I. Gusarov, M.F. Maurstad, V. Løveng; Ust-Kanskii District, 2 km SE of Ust-Kan, valley of Kutergen River, 50.90546°N, 84.73464°E, *Picea obovata* forest with *Spiraea* and green mosses on left river bank, ca 1180 m a.s.l., in and under moss, covering big stones, 19.VIII 2018, 6 ♂, 3 ♀, 1 subadult ♂, 3 juv.; Ust-Kanskii District, 1.7 km SE of Ust-Kan, 50.91142°N, 84.73499°E, *Betula pendula* and *Picea obovata* forest with green mosses and small grass vegetation on N slope, ca 1180 m a.s.l., in moss and rotten logs, 19.VIII 2018,1 ♂, all leg. P.S. Nefediev.

DISTRIBUTION. This species widely occurs from Japan, northern China and the Russian Far East through Siberia and eastern Kazakhstan to the Urals and Volga region (Nefediev *et al*., 2017a; Dyachkov & Tuf, 2018).

REMARKS. This species is reported from Republic of Khakassia for the first time.

***Escaryus koreanus* Takakuwa, 1937**

MATERIAL. **Russia: Novosibirskaya oblast**: Toguchinskii District, Kotorovo village, *Populus tremula* forest, soil samples, 18.VII 1988, 2 juv.; Toguchinskii District, Kotorovo village, glade in *Populus tremula* forest, pitfall traps, 18.VII 1988, 1 ♂, all leg. I. Martynenko; Toguchinskii District, Kotorovo village, *Populus tremula* forest, pitfall traps, 18.VII 1988, 1 ♂, leg. A.S. Babenko; **Altaiskii krai**: Krasnoshchiokovskii District, near Tigirek village, Tigirek State Nature Reserve, Khankhara Site, 23.VII 2004, 1 ♀; Zmeinogorskii District, Tigirek State Nature Reserve, Beloretsk Site, cordon Beloretsk, chern taiga, in litter, 14.VI 2009, 1 ♂, 1 ♀, all leg. D.V. Kuzmenkin; Krasnogorskii District, Karaguzh village, *Alnus*, *Viburnum opulus* and *Sorbus sibirica*, 15.VIII 2016, 3 ♂, 1 ♀; Krasnoschiokovskii District, near Tigirek, Tigirek State Nature Reserve, Khankhara Site, Dragunskii Brook, steppe on SW slope, *Rosa spinosissima*, 17.VIII 2016, 1 ♀, all leg. P.S. Nefediev; Togulskii District, valley of Uskunskaya River, near former village of Kutelyapka, chern taiga, 28.IV 2017, 1 ♂, 2 ♀, leg. L.V. Pozhidaeva; Zarinskii District, Lipnyazhka area, *Tilia* forest, VII 2017, 1 ♀, leg. S.V. Vazhov; Charyshskii District, upper reaches of Belaya River, S macroslope, steppe on slope with bushes and sparse *Larix sibirica*, 20.VI 2017, 1 ♂; Charyshskii District, near Komendantka village, Altai State University Field Station “Goluboi Utios”, *Betula pendula* and *Populus tremula* forest on N slope, ca 520 m a.s.l., 20.VI 2017, 4 ♀, 1 subadult ♂, 1 juv.; Zalesovskii District, at border with Kemerovskaya oblast, 54.235533°N, 85.375949°E, *Betula* forest with *Ribes nigrum*, 400 m a.s.l., 3.VII 2018, 1 juv., all leg. P.S. Nefediev; **Republic of Khakassia**: Ust-Abakanskii District, valley of Uibat River, 53.825765°N, 90.052647°E, mixed forest, in litter, 18.VII 2012, 1 ♀, leg. A.P. Pavlov; Askizskii District, valley of Askiz River, 53.418866°N, 89.749147°E, under stones, 11.VII 2018, 1 juv., leg. S.V. Dragan; Ust-Abakanskii District, valley of Uibat River, 53.825765°N, 90.052647°E, mixed forest, in litter, 18.VII 2018, 4 ♂, 3 ♀, leg. E.V. Gribanova; **Kemerovskaya oblast**: Krapivinskii District, floodplain of Beriozovka River, 55°04′N, 86°18′E, forest-steppe, 14.V 2017, 1 juv.; Krapivinskii District, 5–6 km of Taradanovo village, 54°40′N, 86°41′E, *Populus tremula* forest, in litter and rotten logs, 13.VIII 2017, 2 ♀, all leg. D.A. Efimov; Gurievskii District, at border with Altaiskii krai, 54°16′59″N, 85°26′05″E, *Betula pendula* on hill slope, 15.VII 2017, 2 ♀, 1 juv., leg. P.S. Nefediev; Promyshlennovskii District, N of Salair Ridge, W bank of Pond Tanaev, 54°49′N, 85°09′E, *Betula pendula* and *Pinus sylvestris* forest, ca 160 m, 8.VIII 2018, 1 ♂; Kemerovskii District, 54°29′31.8″N, 86°12′58.2″E, *Populus tremula* and *Pinus sylvestris* forest, 14.VIII 2018, 1 ♀, 1 juv.; Kemerovskii District, 54°29′19.6″N, 86°13′09.5″E, *Pinus sylvestris* forest, 14.VIII 2018, 1 ♂; Kemerovskii District, near Andreevka

village, 54°27′11.3″N, 86°13′55.9″E, *Populus tremula*, *Pinus sibirica* and *Abies sibirica* forest, 14.VIII 2018, 1 ♂; Izhmorskii District, Simbirka village, 56°02′N, 87°10′E, *Pinus sylvestris* forest, 18.VIII 2018, 1 ♀, all leg. D.A. Efimov; **Republic of Altai**: Ulaganskii District, near Aktash village, summit of Mt. Belkenek, 50°15′N, 87°37′E, *Pinus sibirica* and *Larix sibirica* forest on N slope, 1.VII 2016, 1 ♀; Ulaganskii District, near Balykcha, floodplain of Chulyshman River, 4.VII 2016, 1 ♀; Ulaganskii District, valley of Chulyshman River, Altai State Nature Reserve, Stone Mushrooms (Akkurum), *Betula pendula* forest, 5.VII 2016, 2 ♀, 1 juv., all leg. P.S. Nefediev; Gorno-Altaisk, right bank of Maima River, *Salix*, 22.VI 2016, 1 juv., leg. J.S. Nefedieva; Ongudaiskii District, ca 7.5 air-km NEE of Seminskii Pass, Seminskii Mt. Range, near Mt. Sarlyk, 51°03.754′N, 85°42.523′E, alpine meadow with sparse *Larix sibirica*, under stones, 1970 m a.s.l., 21.VII 2018, 4 ♂, 1 ♀, leg. P.S. Nefediev, V.I. Gusarov; Ongudaiskii District, floodplain of Chuya River, near Shirlak Waterfall, 50.34461°N, 87.22323°E, *Betula pendula* forest on river bank, 1015 m a.s.l., 23.VII 2018, 2 ♂, leg. V.I. Gusarov; Ongudaiskii District, valley of Chuya River, Shirlak Waterfall, *Betula* grove along creek, 50°20.690′N, 87°13.213′E, ca 1080 m a.s.l., sifting leaf litter over 40 m, 23.07.2018, 1 ♀, 1 juv., leg. V.I. Gusarov, M.F. Maurstad, V. Løveng; Ulagan District, 10 air-km ENE of Aktash village, Kuraiskii Mt. Range, near summit with retranslator, 50°19.539′N, 87°44.175′E, alpine meadow with rich herbaceous vegetation, Poaceae, *Dryas*, moss and lichens, ca 2555 m a.s.l., sifting dead grass and moss over 50 m, 23.07.2018, 1 juv., leg. V.I. Gusarov, M.F. Maurstad, V. Løveng; Ulaganskii District, 10 air-km ENE of Aktash village, Kuraiskii Mt. Range, summit with retranslator, 50.33958°N, 87.74865°E, rocky mountain tundra, ca 2970 m a.s.l., under stones, 23.VII 2018, 1 ♀, leg. P.S. Nefediev, V.I. Gusarov, M.F. Maurstad, V. Løveng; **Irkutskaya oblast**: Irkutsk, left bank of Angara River, Akademgorodok, 52°14′48.1″N, 104°15′13.4″E, *Betula* and *Populus tremula* park forest with *Pinus sylvestris*, *Alnus fruticosa* and *Swida alba*, ca 520 m a.s.l., 1 ♂, 31.VIII 2018, leg. I.V. Enushchenko.

DISTRIBUTION. This species is rather widespread from Korea and the Far East of Russia in the east through central and SW Siberia to eastern Kazakhstan in the west (Nefediev *et al*., 2017c; Dyachkov & Tuf, 2018).

REMARKS. This species has hitherto been recorded neither from Novosibirskaya oblast nor from Republic of Khakassia, nor from Irkutskaya oblast, all Siberia.

***Escaryus retusidens* Attems, 1904**

MATERIAL. **Russia: Altaiskii krai**: Charyshskii District, near Komendantka village, Altai State University Field Station “Goluboi Utios”, *Betula pendula* and *Populus tremula* forest on N slope, ca 520 m a.s.l., 20.VI 2017, 3 ♂, 4 ♀, 3 juv.; Charyshskii District, near Komendantka village, Altai State University Field Station “Goluboi Utios”, 51°21′44.3″N, 83°37′42.6″E, *Pinus sylvestris* and *Betula pendula* forest with *Spiraea* and *Lonicera* on N slope, ca 620 m a.s.l., 23.VI 2017, 1 ♂, leg. P.S. Nefediev; **Republic of Altai**: Ongudaiskii District, ca 4 km SE of Topuchaya village, 51°05.990′N, 85°37.433′E, near spring, under logs and stones, ca 1270 m a.s.l., 22.VII 2018, 1 ♀, all leg. P.S. Nefediev; Ongudaiskii District, floodplain of Chuya River, near Shirlak Waterfall, 50.34461°N, 87.22323°E, *Betula pendula* forest on river bank, 1015 m a.s.l., 23.VII 2018, 1 ♀, leg. V.I. Gusarov.

DISTRIBUTION. This species is very widespread from Moldova, Ukraine, the Crimea and the Caucasus in the west through SW Siberia and Central Asia to Cisamuria in the east (Nefediev *et al*., 2017c).

REMARKS. Despite the vast distribution area of *E. retusidens*, it is restricted in Siberia by Altaiskii krai and Republic of Altai.

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